

Chapter 5: Mid-chapter Review

- Make sure you have completed all of the previous homework assignments from sections 5.1 to 5.3, including the extra practice sheets from 5.2 and 5.3.
- Read *FREQUENTLY ASKED Questions* on page 325 - 326.
- Complete the following from *PRACTISING* on page 327:
#1 – 9 (all)

WYNTKABATD

Section 5.1

- Determine whether a game is fair or not using theoretical probabilities.
- Understand the difference between experimental and theoretical probabilities.
- Create an outcome table or other sample space for a game or experiment.
- Express probabilities as fractions, decimals and percents that range from 0 to 1 (0% to 100%)

Section 5.2

- Calculate probabilities for different types of events.
- Calculate the probability of an event NOT happening, given the probability that it does happen.
- Calculate odds in favour and odds against a certain event happening.
- Use a given probability to determine odds in favour or odds against.
- Use a given statement about odds to determine the probability of an event.

Section 5.3

- Calculate probabilities and odds for events where outcomes must be counted using counting principles such as:

$$FCP \quad n! \quad nPr \quad nCr \quad \frac{n!}{a!b!c!...}$$

Important:

Ratios written as fractions like $\frac{a}{b}$ are reserved for *probabilities*. These are often converted to decimal values or to percents.

“**Lowest terms**” for a fraction – you must divide out common factors.

$\frac{88}{720}$ is not in lowest terms

Convert: $\frac{88}{720} = \frac{88 \div 8}{720 \div 8} = \frac{11}{90}$

Important:

Ratios written with a colon like $c:d$ are reserved for **odds**. Odds are never converted to a decimal value or percent.

“**Lowest terms**” for a ratio – you can’t have any fractions or decimals on either side of the colon and you must divide out common factors.

$\frac{4}{19} : \frac{15}{19}$ is not in lowest terms

Convert: $\frac{4(19)}{19} : \frac{15(19)}{19} = 4:15$

0.36 : 0.64 is not in lowest terms

Convert: $0.36(100) : 0.64(100) = 36:64 = (36 \div 4) : (64 \div 4) = 9:16$

85:15 is not in lowest terms

Convert: $(85 \div 5) : (15 \div 5) = 17:3$

Fundamental Relationships:

$P(A)$ represents the probability that event A occurs

$P(A')$ represents the probability that event A does not occur

$$P(A) = \frac{\# \text{ of } \textit{favourable} \text{ outcomes}}{\textit{total} \# \text{ of outcomes possible}} = \frac{n(A)}{n(\textit{sample space})}$$

$$P(A') = \frac{\# \text{ of } \textit{unfavourable} \text{ outcomes}}{\textit{total} \# \text{ of outcomes possible}} = \frac{n(A')}{n(\textit{sample space})}$$

$$P(A) + P(A') = 1 \text{ (or 100\%)}$$

$$P(A') = 1 - P(A) \quad \text{or} \quad P(A) = 1 - P(A')$$

$$n(A) + n(A') = n(\textit{sample space})$$

Odds in favour: $P(A):P(A')$ or $n(A):n(A')$

Odds against: $P(A'):P(A)$ or $n(A'):n(A)$